

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY.

To:

see form PCT/ISA/220

PCT 9 MAY 2005

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2005/050607

International filing date (day/month/year)
17.02.2005

Priority date (day/month/year)
17.03.2004

International Patent Classification (IPC) or both national classification and IPC
G01R33/565

Applicant
KONINKLIJKE PHILIPS ELECTRONICS N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, Inventive step and Industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, Inventive step or Industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the International application
- ☒ Box No. VIII Certain observations on the International application

2. FURTHER ACTION

If a demand for International preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050607

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
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**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, Inventive step or—
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	5-10,16
	No: Claims	1-4,11-15,17-20
Inventive step (IS)	Yes: Claims	5-8,16
	No: Claims	1-4,9-15,17-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
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International application No.

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ad V:

1.) Reference is made to the following documents:

D1 = MRM 29 (1993) 804-811

D2 = MRM 49 (2003) 409-416

D3 = MRM 48 (2002) 715-722

D4 = US-A-5 166 620.

2.) Novelty and Inventive Step (Article 33(1)-(3) PCT)

2.1 *Claims 1,15,18*

The subject-matter of claims 1,15,18 would appear to lack novelty with respect to each of the documents D1-D4 (see e.g. the passages of these documents cited in the search report). This lack of novelty would appear to be so obvious that no further explanations are deemed necessary.

In fact, it is well known in the art that shim coils (e.g. Z^2 or Z^4) may produce a B_0 -offset and that this offset, just like B_0 -offsets arising from other causes, may be compensated for either by adjusting the transceiver reference frequency or by using a B_0 -shim coil. It is also well known that shim coils generate heat which may cause a thermal drift of B_0 , which again can be compensated for in the known manner. Thus, the subject-matter of the independent claims 1,15,18, in fact, belongs to the general knowledge of those skilled in the art.

2.2 *Claims 2-4,9-14,17,19,20*

These dependent claims do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see the citations in the search report.

2.3 *Claims 5-8,16*

The additional features of claims 5-8 and 16, on the other hand, would not appear to be known from the prior art.

ad VII:

- 1.) Documents D1-D4 should be acknowledged.
- 2.) The independent claims should be cast in the two-part form.

ad VIII:

- 1.) There is a lack of conciseness due to the presence of two independent device claims (15 and 18).
- 2.) *Claim 1*
Every shim coil is **designed** to generate "a magnitude shift" of B_0 (it being noted that "a magnitude shift" need not be a spatially uniform change in B_0 but could have any spatial dependence). Claim 1 reads as if this desired shift was compensated for. This is confusing and claim 1 should be clarified in this respect.
- 3.) *Claim 10*
It should be made clear that the "vector" comprises non-vanishing components orthogonal to B_0 .
- 4.) *Claim 18*
 - a) The broad scope of claim 18 is not supported by the description.
 - b) The device of claim 18 would not appear to provide a technical effect other than that provided by conventional MRI scanners comprising shim coils, since the process executed by the processor apparently has no technical consequences.
 - c) Moreover, claim 18 reads as if the processor was only the conventional shim currents processor mentioned on page 6, lines 25-27 of the description which "determines appropriate shim currents for one or more of the shim coils" by calculating the magnitude shift of B_0 associated with a change in the shim currents.
- 5.) *Claim 19*
It is not clear which technical limitation the method feature "selectively energized to

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..." imposes on the device claimed.

6.) *Claim 20*

The feature "being tuned to ..." is no device feature.

7.) *Description*

The text on page 1, lines 3-4 of the description is inconsistent with the wording of the claims. Moreover, it is not clear what the "other techniques" could be.